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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/655,269	09/05/2000	Parviz Khosrowyar	KHO820/99482	8035

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EXAMINER	
LISH, PETER J	

ART UNIT	PAPER NUMBER
1754	

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No.	Applicant(s)	
	09/655,269	KHOSROWYAR, PARVIZ	
	Examiner	Art Unit	
	Peter J Lish	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *11-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 10/22/03 have been fully considered but they are not persuasive. Applicant argues that none of the prior art applied in the rejections of the previous office action explicitly teach step e) of claim 1, which requires providing the combustion gas obtained from burning (or thermally oxidizing) the non-condensable gases through a "heat recovery tube", the tube thereby being capable of heating a glycol absorbent which contacts the tube to its boiling point. It is seen that the prior art applied, specifically Choi and Anderson, do indeed teach this limitation, though they may not specifically use the same terms as the applicant (thermal oxidizer, heat recovery tubes, etc.).

Applicants additionally argue that limitations of the newly amended claims 8 and 25 are not taught by the prior art of reference. However, the newly amended limitations only limit the method to controlling the temperature of the heat recovery tubes or of the reboiler by controlling the amount of gas which is vented from the heat recovery tubes and from the reboiler. Because careful temperature control of the reboiler (which depends upon careful control of the surface temperature of the heat recovery tubes) is required, the control of this temperature is an obvious optimization of a known process.

The applicant additionally argues that there is no motivation to combine the references of Rhodes with either those of Choi or Anderson. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the

references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation exists because, as stated in the previous office action, Rhodes teaches that sparging the absorbent in the reboiler is effective at removing residual water, which better prepares the absorbent for recirculation back to an absorber for further absorbing hydrocarbons and water.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 5-8, 10, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi '981 in view of Miles '523.

Choi '981 teaches glycol absorbent having absorbed hydrocarbons are passed to a reboiler. The vapors from the reboiler pass through a still having a condenser, where the vapors are partially condensed. Vapors coming from the still are passed to another condenser where heavier hydrocarbons and water are condensed, which are then collected in reservoir 26. Non - condensable vapors are then passed to a firetube inside the reboiler, where they are burned, or "thermally oxidized", and the combustion gas is sent through pipes, or "heat recovery tubes", which heat the glycol absorbent in the reboiler. BTEX or Benzene, toluene, ethylbenzene, and xylene comprise most of the hydrocarbon impurities.

Choi '981 does not disclose placing a vaporizer to vaporize residual liquid in the vapors coming from the condenser and still. However, Miles '523 teaches in a similar process where contaminants and water are vaporized in a reboiler to subsequently be sent to a burner, directing the contaminants and water from the reboiler to a superheater, which reduces liquid carryover into the burner. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to place a superheater (vaporizer) before the burner of Choi '981, because Miles '523 teaches that the superheater promotes oxidation and complete combustion of the vaporized mixture.

Regarding claims 8 and 25, Choi does not explicitly teach controlling the temperature of the heat recovery tubes or of the reboiler by controlling the amount of gas which is vented from the heat recovery tubes and from the reboiler. However, because careful temperature control of the reboiler (which depends upon careful control of the surface temperature of the heat recovery tubes) is required, it would have been obvious to one of ordinary skill at the time of invention to control the temperature by controlling the amount of gases vented from the reboiler and from the firetube, or heat recovery tubes.

Regarding claims 6-7, Choi additionally teaches that the glycol absorbent is preheated before it is passed to the reboiler. Anderson does not explicitly teach preheating the glycol by a heating means in the thermal oxidizer, or burner, vent stack. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to preheat the glycol using another heat source, namely the vent stack, because recovering heat for use in a process that would otherwise be lost to the environment contributes to the efficiency of the process.

Claims 1, 5-8, 10, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson '166 in view of Miles '523.

Anderson teaches that glycol absorbent having absorbed hydrocarbons are passed to a reboiler. The vapors from the reboiler pass through a still and then to a condenser, where BTEX gases are condensed. Vapors and liquid are passed to a separator. Non-condensable vapors are then sent to a burner where they are burned, or "thermally oxidized", and the combustion gas is sent through pipes, or "heat recovery tubes", which heat the glycol absorbent in the reboiler.

Anderson does not disclose placing a vaporizer to vaporize residual liquid in the vapor stream coming from the separator. However, Miles '523 teaches in a similar process where contaminants and water are vaporized in a reboiler to subsequently be sent to a burner, directing the contaminants and water from the reboiler to a superheater, which reduces liquid carryover into the burner. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to place a superheater (vaporizer) before the burner of Anderson, because Miles '523 teaches that the superheater promotes oxidation and complete combustion of the vaporized mixture.

Regarding claims 8 and 25, Anderson does not explicitly teach controlling the temperature of the heat recovery tubes or of the reboiler by controlling the amount of gas which is vented from the heat recovery tubes and from the reboiler. However, because careful temperature control of the reboiler (which depends upon careful control of the surface temperature of the heat recovery tubes) is required, it would have been obvious to one of

ordinary skill at the time of invention to control the temperature by controlling the amount of gases vented from the reboiler and from the burner tube, or heat recovery tubes.

Regarding claims 6-7, Anderson additionally teaches that the glycol absorbent is preheated before it is passed to the reboiler. Anderson does not explicitly teach preheating the glycol by a heating means in the thermal oxidizer, or burner, vent stack. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to preheat the glycol using another heat source, namely the vent stack, because recovering heat for use in a process that would otherwise be lost to the environment contributes to the efficiency of the process.

Claims 2, 3, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi '981 in view of Miles '523 or Anderson '166 in view of Miles '523 as applied to claims 1, 5-8, and 10 above, and further in view of Tuckett '103.

The prior rejection of claims 1, 5-8, and 10 as being unpatentable over Choi '981 in view of Miles '523 or Anderson '166 in view of Miles '523 is applied herein. None of the references teach specific glycol compounds used in the art to absorb water and hydrocarbons from the natural gas. However, Tuckett '103 teaches in column 1, lines 39-45 that diethylene glycol, triethylene glycol, and ethylene glycol (all of which fall under the general term of glycol used by Choi and Anderson) are commonly used as desiccants to remove water from natural gas. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use these desiccants in the process of Choi '981 or Anderson '166 in view of Miles '523 because these are commonly known desiccants in the art for removing water from natural gas.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choi '981 in view of Miles '523 or Anderson '166 in view of Miles '523 as applied to claims 1, 5-8, and 10 above, and further in view of Rhodes '675.

The prior rejection of claims 1, 5-8, and 10 as being unpatentable over Choi '981 in view of Miles '523 or Anderson '166 in view of Miles '523 is applied herein. None of the references teach sparging the glycol in the reboiler with a stripping gas. However, Rhodes '675 teaches in column 4, lines 47-55 sparging glycol in a reboiler with a stripping gas. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to also include a sparger for introducing stripping gas into a reboiler because Rhodes '675 teaches this is effective for removing residual water. It would have been obvious to one of ordinary skill in the art to do this because further removing water better prepares the glycol stream for recirculation back to an absorber for further absorbing hydrocarbons and water.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PL

STUART L. HENDRICKSON
PRIMARY EXAMINER